

**STRATEGY
RESEARCH
PROJECT**

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**TRAINING AND EDUCATING ARMY OFFICERS FOR THE
21ST CENTURY: IMPLICATIONS FOR THE UNITED STATES
MILITARY ACADEMY**

BY

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USAWC STRATEGY RESEARCH PROJECT

**Training and Educating Army Officers for the 21st Century:
Implications for the United States Military Academy**

by

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ABSTRACT

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The world is facing a paradigm shift as we enter an Information Age characterized by rapid change. The purpose of this project is to explore the implications of this new era on the United States Military Academy. The first part of the paper examines the forces shaping the 21st century and their relevance to the Academy's mission of developing leaders for the Army and our nation. The second and third sections look at implications on the military as an organization and individual issues related to the leader/manager paradox. Trends in education reform and a possible education revolution are addressed in the fourth section. An analysis and recommendations for the Academy's role in the future conclude the report.

TABLE OF CONTENTS

ABSTRACT	iii
LIST OF TABLES	vii
A GLIMPSE OF THE FUTURE	2
A WHOLE NEW PLAYING FIELD	2
INFORMATION TECHNOLOGY:AN EMERGING ELEMENT OF NATIONAL POWER .	9
BEYOND THE "POST-COLD WAR" MILITARY	11
IMPLICATIONS ON THE MILITARY AS AN ORGANIZATION	13
INDIVIDUAL ISSUES AND THE LEADER/MANAGER PARADOX	15
THE COMING EDUCATIONAL REVOLUTION	17
WEST POINT'S ROLE IN THE FUTURE	20
CONCLUDING THOUGHTS	24
ENDNOTES	27
BIBLIOGRAPHY	31

LIST OF TABLES

Table 1: Research-Based Guidance for Improving Student Learning	23
Table 2: Characteristics of Active Learning.....	24

The world is facing a paradigm shift as we enter an Information Age characterized by rapid change. Correspondingly, the military will face significant challenges in developing leaders for the 21st century. This project explores the implications of this new era on the United States Military Academy. It addresses how we should train and educate today's West Point cadets who will serve well into the middle of the next century.

What issues will confront these future military leaders? What characteristics and skills will they need to face these challenges? How best should we develop these young officers to prepare them for these emerging leadership roles? These questions are addressed in this report.

The first part of the paper examines the forces shaping the 21st century and their relevance to the Academy's mission of developing leaders for the Army and our nation. The second and third sections look at implications on the military as an organization and individual issues related to the leader/manager paradox. Trends in education reform and a possible education revolution are addressed in the fourth section. An analysis and recommendations for the Academy's role in the future conclude the report.

A GLIMPSE OF THE FUTURE

The world is facing a fundamental shift unparalleled for 400 years. The last time such rapid and radical change took place was during the move from the medieval era to the Industrial Age. The current shift from the Industrial Age to the Information Age may be as dramatic, if not more so. Accurate predictions of this new era are difficult at best and fraught with uncertainty. This implies we need an adaptable and flexible military. Leaders will need to deal with complex issues and accept nontraditional roles.^{1, 2}

A WHOLE NEW PLAYING FIELD

I contend that many issues in this new Information era will have extreme relevancy to the way we train and educate young officers at the United States Military Academy. I divide these issues into two main categories. The first is the "hardware" components of the "system of life," or the environment in which we will live. These include science, technology, and energy sources, along with population and environmental concerns. Next, our 21st century military must deal with human relations and interactions in that environment. These are the "software"

components of the "system of life," which raise socioeconomic and political issues.

The scientific revolution we are experiencing will be profound. Technology is transforming our lives at unprecedented rates. This revolution is being spearheaded by new methods of information collection, manipulation, and storage. Data is proliferating at an exponential rate. The sheer quantity of information is difficult to analyze. Organizations like the military confront data overload. Indeed, this phenomenon is already occurring in daily military operations.

Information will be a major commodity in the new era. The military may find themselves protecting information as a vital national interest, much the way natural resources and territory have been protected in the past. Information terrorism will rise. Deterrence of information threats will present new challenges.³

Another "hardware" component of the rapidly changing world is Virtual Reality (VR): "VR is to the Information Age what the telephone was to the Industrial Age."⁴ Virtual Reality allows us to move complete information rather than people. It has the potential to revolutionize military communications, as well as command and control. As the military moves from wire/radio

communications to Virtual Reality, it may encounter more dramatic challenges than when it moved from messenger to wire/radio communications during the Industrial Age.

Computer modeling and simulation go hand and hand with the advances in Virtual Reality. SimNet, a new military system, "allows participants scattered around the world to simultaneously visit the same virtual battlefield in whatever type of airplane, tank, or other equipment they use."⁵ Simulations may very well replace actual training on most military equipment and systems in the future.

Robotics will also have huge implications on the military. Robotics offer a capability to sense, control, analyze, and perform combatant and noncombatant roles. The ability to prosecute war while reducing the exposure of human lives appears to be attractive. Current examples include mine detection and neutralization, explosive ordnance disposal, and hazardous material handling. Robotics may offer many other important implications in this arena.

Other opportunities and challenges for the military include biotechnology and bioelectronic devices. Biotechnology enables us to manipulate the genetic structure of humans. This too may have profound consequences. Will the future military be composed

of individuals tested for their genetic map prior to enlistment or prior to a selection or assignment for particular duties?

Ethical issues will certainly arise if we are able to "engineer" humans to eliminate disease and enhance certain characteristics.⁶

Bioelectronics and biotechnology in the future may produce replacements for major organs of the body. For example, electronic devices implanted in the ear could provide automatic translation of languages. Obviously, such technology could enhance combined military operations with other countries.

Society may very well ask the military to lead the way in energy issues. Energy conflicts will increase in number and intensity. The Gulf War is an excellent example of this phenomenon. It probably portents future trends in warfare. In the fight for decreasing budgetary dollars, the military may be asked to combine their research and development (R&D) efforts with efforts of other government agencies. This could leverage buying power and help us meet new energy challenges as fossil fuels are less and less available.

As with energy issues, population and environmental problems could have serious implications for military leaders in the Information Age. The loss of natural resources leads these concerns. "Countries are already prepared to go to war over oil;

in the near future, water could be the catalyst for armed conflict.⁷

Environmental stewardship in the U.S. is becoming a preeminent concern. The military is being asked to lead this crusade. We are currently allocating large portions of our defense budget to environmental site cleanup. As a possible glimpse of the future, "retired Army general Frederic Brown advocates ... fielding specially trained 'Chernobyl battalions' that would be able to deal with nuclear and other toxic disasters."⁸

Significant changes will also occur in the U.S. population. More people of more cultures, local and regional clustering, and a growing disparity between the rich and the poor may develop in America. These changes may also pose additional challenges to future military leaders. The armed forces generally mirror society. Societal problems may yield similar or systemic problems in our military culture.⁹

The second grouping of future issues fall into the socioeconomic and political arenas. The increase of global human interaction may challenge the very existence of nation states. International borders may erode. Possible organizations like a

Global Council of Global Corporations may counterbalance nation state power.¹⁰

Even so, small regional conflicts will increase. Regional security arrangements may replace superpower dominated relationships. The implications for future leaders of the armed forces are again profound. Currently U.S. military presence on foreign soil is a major guarantor of regional stability. With shrinking defense budgets and our shift toward power projection forces, U.S. presence may actually decrease, thereby allowing for more regional conflicts.¹¹

Social issues will also affect the armed forces. Within the U.S. borders, former Commandant of the Marine Corps General Alfred Gray states that the "greatest threat to U.S. national security is the combination of crime, drugs, lost educational opportunities and the economic consequences of these failures."¹² Similarly outside of the U.S.,

scarcity, overpopulation, tribalism, and disease are rapidly destroying the social fabric of our planet....West Africa is becoming the symbol of worldwide demographic, environmental, and societal stress, in which criminal anarchy emerges as the real 'strategic' danger.¹³

War betokens our failure to deal effectively with such socioeconomic and political issues. The proliferation of weapons

simply makes the choice of war easier. A threat of terrorists with nuclear weapons exists. Defense articles are beginning to describe a new generation of genetically-engineered biological warfare agents designed to take out certain types of people based on their genetic makeup.¹⁴

The proliferation of weapons is most frightening when considering the hands into which they may fall. These weapons were originally "a deterrent to their own use. Now, if reports are true, these extraordinary devices are finding their way into the hands of the people who want to use them."¹⁵ Unfortunately a "large number of people on this planet, to whom the comfort and stability of a middle-class life is utterly unknown, find war and a barracks existence a step up."¹⁶

It is obvious that the Information era offers tremendous implications for our future military leaders. They will need to be flexible enough to adapt to these new challenges. "Change is omnipresent; change will be one of the few constants in the late 1990s and into the next century."¹⁷ Even in the most positive scenarios, our young officers will be fully engaged and play a critical important role in the future of humanity.

INFORMATION TECHNOLOGY:AN EMERGING ELEMENT OF NATIONAL POWER

Information technology is clearly emerging as a distinct instrument of national power, as well as an enhancer of the more traditional elements of power. This fact will also have a notable impact on the way we train our junior officers. Leaders will need to be cognizant of how information fully impacts military and national power. "[P]ower is contextual in that it can only be evaluated in terms of all the power elements...and the elements of national power, no matter how defined, can be separated only artificially."¹⁸ A grasp of these complexities will be key to the success our future leaders.

Information will increasingly become an enabler in our nation's overarching capability to apply power in preparing, shaping, and responding to the international environment. One of the stated goals of our nation's flexible and selective engagement strategy is to "win the information war."¹⁹ Information Operations are a major concept of the so-called Revolution in Military Affairs (RMA) our future military faces. Traditional military concepts are expected to be leveraged with technological advances and information superiority to produce Dominant Maneuver, Precision Engagement, Full Dimension Protection, and Focused Logistics.²⁰

Three emerging military instruments are generally grouped under the general category of an informational element of power. The "system of systems" is described as an operational synergy of battlespace awareness, command and control, and precision force to revolutionize military force. Information Dominance, the second concept, will provide information "bitstreams" to allies much the way we currently send economic aid. The last instrument of information power is commonly referred to as Information Warfare. It envisions attack of an opponent's information system without the use of military force.²¹

There are plenty of examples of technological indicators that point to the importance of information technology in the future and the need for future leaders to be aware of its impact. By the mid-1990s over one-third of the U.S. population owned a computer. A fourth of all workers were network-connected. More importantly, the U.S. software industry accounted for three-fourths of the world market and nine of the world's ten biggest software companies were located in the United States.²²

We faced a similar period in the 1920s and 1930s, when our nation entered a "period of great geopolitical and military-technical transformation during which innovation abounded, e.g., strategic bombing, carrier aviation, armored warfare, submarine

and anti-submarine warfare, and amphibious warfare.”²³ During that period, the United States military made the decision to remain somewhat status quo, making only minor changes to the way they did business. We must not miss the opportunity to invest in the way we train and prepare our future leaders this time around. Undoubtedly, information technology will play a huge role in shaping the future.

We cannot afford to remain passive. We must actively transform our junior leaders to be in tune with the threats and opportunities of the information age. Otherwise, we run the risk of becoming vulnerable to a mid-sized power that uses information warfare to disrupt the system networks on which the U.S. depends. Human nature resists change. This is the biggest impediment we currently face. “[T]he problem with deep, fast, and rampant innovation is not getting people to accept the new but to surrender the old.”²⁴

BEYOND THE “POST-COLD WAR” MILITARY

The term “post-Cold War” is still being used to describe the current global security system. This suggests that the world is still in a transitional phase and that the system which will replace the Cold War era is not yet fully formed.²⁵ The eventual

world alignment will have an impact on the way we train our future young officers much the way the Cold War and the Age of Deterrence shaped leaders of the last several decades.

While the armed forces of the 21st century will see substantial technological improvement, these changes may not completely transform existing military structure and hardware. Because of widespread global commitments and increase fiscal pressure, countries like the United States may find they cannot bring their entire military to the cutting edge. The expense of 21st century technology and talent and the diverse range of operations the armed forces must perform may be a significant limiting factor.²⁶ One view of this scenario is offered by Ralph Peters in his recent book The War in 2020. The American Army, ravaged by regional conflicts in Africa and responses to domestic disturbances which siphon their combat power, is only able to field one fully-equipped cavalry regiment with the latest in technological weapons to meet the challenges of the brave new world.

Perhaps the impact on the training and educating of future leaders in the "post-Cold War" era is best summed up in a recent article by David Price:

Numerous trends will shape military leadership over the next thirty years. First, traditional hands-on

leadership will remain essential. Second, the current trend toward joint operations will evolve into thoroughly integrated forces. Third, peace operations and other noncombatant roles will continue to grow - becoming a major share of our overall military mission. Fourth, new technology will go on driving rapid change. And finally, fiscal restraints will continue to affect military decisions, especially those related to force structure and modernization.²⁷

IMPLICATIONS ON THE MILITARY AS AN ORGANIZATION

Organizational Development (OD) is the applied behavioral science discipline for improving organizational effectiveness and the individual well-being of those in the organization. Its focus is on organizational frameworks that are already in place and need to be continually refined.^{28, 29}

Organizational Transformation goes far beyond development in that it "seeks to create massive changes in an organization's structure, processes, culture, and orientation."³⁰ As the military moves into the Information Age it will likely face this type of organizational transformation.

First-order change deals with routine activities, issues, and problems; second-order change represents a fundamental shift in the organization. Second-order change - transformational change - questions an organization's basic assumptions and deals with new and unknown elements in its environment.³¹

The Industrial Revolution was characterized by mechanistic, bureaucratic organizations. The Information Age is spawning organic organizations that are more knowledge-based and less hierarchical in structure. Young officers trained and educated today must be better versed in the "free-flowing organic organizational design that is becoming more common in Toffler's fast-paced Third-Wave organizations."³² Young leaders will face military organizations with fewer levels of authority and more links to other military organizations where expertise becomes more of a power base.³³

Planning is a critical function for any military organization. This task often falls on the shoulders of staff officers. In the High Tech/Information Age, the time frames for the stages of planning are rapidly collapsing.³⁴ Again, this will have a profound impact on the way the military trains and educates junior officers.

The bureaucratic organizational structure will always have its place in the military system. The mechanistic organizational arrangement is particularly useful in units where new soldiers first entering the military require guidance and nurturing. The bureaucratic structure is such that new members are shown how

work is accomplished in an orderly, efficient, and effective way.³⁵

In operational units, however, the Information Age will drive military structure more toward organic organizations or hybrids of an organic-bureaucratic approach. "In situations that are characterized by volatile, uncertain, complex, and ambiguous (VUCA) conditions, it becomes necessary to structure organizations in such a way that will meet the challenges presented by the environment."³⁶

INDIVIDUAL ISSUES AND THE LEADER/MANAGER PARADOX

The implications of the new Information Age on young officers as individuals may be more profound than the organizational structure changes described in the previous section. As leaders "in the 1990s and the 21st century, [they] will be continually challenged to review their roles and responsibilities. They must seek to blend the basic theories of management with nontraditional approaches to do their jobs better."³⁷

In the corporate world, managers today "are watching hierarchy fade away and the clear distinctions of title, task, department, even corporation, blur. Faced with extraordinary levels of complexity and interdependency, they watch traditional

sources of power erode and the old motivational tools lose their magic."³⁸ Complexity and interdependency may soon cause the military to face similar challenges in an analogous way. In this new era, officers can expect to operate in leaner, flatter organizations with many more channels for action and strategic pathways that may soon ignore traditional chains of command.³⁹

There is a fine balance between leadership and managerial qualities. One author suggests that "leaders and managers are basically different types of people, the conditions favoring the growth of one may thwart the growth of the other."⁴⁰ He goes on to observe that "[b]ureaucratic organizations, in which managers flourish, may be inimical to the growth of leaders. Organizations that encourage close mentoring relationships between junior and senior executives are more likely to foster leaders."⁴¹

Despite its bureaucratic qualities, the Army needs to continue its abilities to develop leaders. While managerial qualities are important, a proper balance with leadership characteristics will continue to be critical in the new High Tech/Information Age. As we train and educate our future leaders, we must continue to foster a

culture where people value strong leadership and strive to create it. Just as we need people to provide

leadership in the complex organizations that dominate our world today, we also need more people to develop the cultures that will create that leadership. Institutionalizing a leadership-centered culture is the ultimate act of leadership.⁴²

THE COMING EDUCATIONAL REVOLUTION

As our future military leaders face rapid change to the environment in which they will operate, a similar revolution will take place in the way we educate our young officers. Much of the organizational and structural change discussed in the previous section that is making its way through today's society is spearheaded by the business community. In an analogous manner, the military will initiate real transition when it realizes that the true Revolution in Military Affairs (RMA) will transcend technology. It will occur when revolutionary (vice evolutionary) changes appear not only in military organizations, but also in military doctrine and structure. In time, this type of revolutionary reform will certainly invade education as well.

Experience will play an increasingly important role in education. Virtual Reality (VR) tools will allow a fundamentally new approach to learning. Students will learn by *actually doing* required tasks. For example, we may find that laser-disk VR formats may be checked out much the way library books are checked

out today. Rather than read an historical account, future students may take a virtual walk through certain periods of history. Science may involve moving virtual atoms and molecules while observing the resulting reactions. Engineering students may actually test their design projects using VR computer-aided packages.⁴³ In sum, the rate of learning could rapidly increase. Research shows that student assimilation and retention are much higher in an interactive learning environment.

Noted education expert Richard Paul argues that the two central characteristics of the future: accelerating change and intensifying complexity, must be met with curriculum design changes and instruction that fosters critical thinking.⁴⁴ The United States Military Academy is in a unique position to conceptualize education as a holistic approach. Rather than offering schooling which is more training, socialization, or indoctrination, there is an urgent need to place critical thinking at the heart of education reform. Future focus must be on reasoning and disciplined thinking, rather than simply committing specific facts to memory, passing a required number of courses, or merely gaining academic credits or degrees.⁴⁵

It has been noted that in America's best classrooms the emphasis has shifted to learning to collaborate and communicate.

The focus has turned to group learning rather than individual achievement and competition.⁴⁶ The environment at West Point with small group classes is conducive to this concept. Students in this type of setting learn to articulate, clarify, and restate from each other in identifying and finding answers. "They learn how to seek and accept criticism from peers, solicit help, and give credit to others. They also learn to negotiate-to explain their own needs, to discern what others need and view things from others' perspectives."⁴⁷

Interdepartmental dialogue is another form of group learning. For example, today's engineering curriculums are increasingly interdisciplinary. Educators are rapidly realizing that shared knowledge and experience are the only ways to tackle today's complex problems.

West Point will need to produce officers who can perform these skills. The unique tasks of the military profession require leaders who can communicate and work effectively with others while framing and resolving ill-defined problems. The goal is to graduate officers who are independent learners and intellectually curious.⁴⁸

In casting changes to meet this oncoming educational revolution, the Military Academy would be well served to heed the recent remarks of an Air Force Academy Professor:

The preeminent military mission is to prepare for and prevail in combat. However, the nature of combat has changed. This change in turn has had significant consequences for the way in which the academy must develop and inspire its students to become air and space leaders. Technology has increased both the precision and the lethality of our weaponry, military operations have become increasingly complex and interdependent, and chaos has replaced communism as our principal foe. Military effectiveness in the future will depend far more on flexible and enlightened leadership than it has in the past. Recognition of these challenges provided a strong impetus for considering new approaches to education at the [air force] academy.⁴⁹

WEST POINT'S ROLE IN THE FUTURE

The implications of the preceding sections on West Point's role in the future are profound. It is conceivable that the global security system in place by 2030 will be one in which major interstate war is not the only significant form of conflict. Some of the changes I have discussed will require an absolutely fundamental reorientation of our U.S. military and the way we breed our young officers.⁵⁰

Steven Metz, in looking at the military implications of alternative futures, offers three prescriptions. In his view, to

which I subscribe, the military should continue to explore information warfare, casualty minimizing techniques, and the impact that the proliferation of weapons of mass destruction will have on military operations. Secondly, the U.S. military will need to continue to examine fundamental concepts and stress flexibility of organizational structure and doctrine. And third, the U.S. military must continue to pursue futurism.⁵¹

It is inevitable that the military will face many more small-scale, integrated multinational force deployments in the future. The young officers that West Point trains and educates must comprehend diverse cultural elements and language differences. Although joint and combined experience will be the norm, it must not be overdone. Developing and educating young officers in the integrated employment, joint or combined, should not serve to diminish core service responsibilities. By becoming *too joint*, the profession of arms could be criticized for "majoring in minors." Calls for substantial amounts of joint education at the precommissioning level could lead to that point.⁵²

Military Academy graduates will be expected to be more business-like to meet fiscal challenges. Maintaining quality while reducing costs is a watchword for the 1990s well into the 21st century. Likewise, the junior officers of the next

generation will be expected to understand the technology revolution. While individual members of our future military leadership team will need an unprecedented wealth of generalist skills, they must also possess a firm grasp and be able to take advantage of new technologies.⁵³

Because of the possibility of radical change in military organizations, a basic understanding of the Organizational Development and Transformation discipline could be beneficial to our young officers. Group dynamics, team building activities, and the nature of effective teams would be useful topics when entering a military that is facing a movement toward more organic or at least hybrid organic-bureaucratic organizations. A fundamental understanding of intergroup and organizational interventions could also be taught. While these topics may not warrant a full course during undergraduate study, they are topics that are easily integrated with other subjects. Military team events or even sports and athletic team competitions offer opportunities to introduce these concepts and better prepare junior officers for the world they will face.

In addressing the challenges of the ongoing education revolution, West Point can be commended for some of the positive steps it is taking. In general, their teaching philosophy is

rapidly moving toward promoting active learning through stimulating student/faculty intellectual interaction. In a pamphlet issued to all new faculty, they publish research-based guidelines for improving student learning (Table 1).⁵⁴

Table 1: Research-Based Guidelines for Improving Student Learning

In general, students learn more and learn more deeply when they...

- Engage actively in their academic work
- Set and maintain high but realistic expectations
- Ask for and are provided with regular, timely, and specific feedback
- Pay attention to their ways of working so that they can monitor and focus their energies and attention
- Become self-aware and self-directed
- Connect new information to prior knowledge
- Organize what they're learning in personally meaningful and academically appropriate ways
- Look for real-world applications of their academic work
- Work regularly and productively with faculty
- Work regularly and productively with other students
- Invest as much engaged time and high-quality effort in their academic work as possible

Presented by Dr. Thomas A. Angelo in workshop on classroom assessment at Lilly Conference on College Teaching, November 1995.

Similarly, characteristics of active learning are emphasized (Table 2).⁵⁵ These types of active learning strategies are the progressive steps West Point will need to continue to take to keep pace with the rapidly changing Information Age.

Table 2: Characteristics of Active Learning

- Students are doing more than listening
- Emphasis is placed on developing students' skills versus transmitting information
- Students are engaged in higher-order thinking (e.g., analysis, synthesis, evaluation).
- Students are engaged in "hands-on" activities (e.g., planning, organizing, writing).
- Students' exploration of their own attitudes and values is emphasized.

CONCLUDING THOUGHTS

Despite rapid change, the Military Academy must never forget that traditional leadership traits remain essential. New lieutenants for the 21st century will be called upon to perform many of the same tasks lieutenants have been called upon to perform for centuries past. First and foremost, young officers train, motivate, lead and direct. They enforce standards and discipline while promoting group cohesiveness. They are decisionmakers that impart organizational goals.

If the United States Military Academy is to continue to produce capable and respected leaders for the 21st century, they must stay a step ahead. My recommendations are to maintain a firm leadership foundation with a solid base in doctrine. Graduates must be versatile, computer literate, and technologically competent. Without a doubt, in the Information

Age, future young officers will need to synchronize complex,
multiple systems with a warrior spirit and attitude.

4890

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